Supplemental Digital Content:

Appendix 1.
Inclusion and non-inclusion criteria for the study
Inclusion criteria:

- Age ≥18 years.
- Documented diagnosis of abdominal sepsis according to the SEPSIS-3 criteria at the time of inclusion, most likely of gram-negative etiology.
- Immediate postoperative period (≤ 24 h after surgery)
- Hypotension requiring vasopressor support (the need for at least one of the vasopressors listed below at the dose listed below no less than 2 and not more than 12 h continuously):

- Norepinephrine > 0.05 μg/kg/min
- Dopamine > 10 μg/kg/min
- Phenylephrine > 0.4 μg/kg/min
- Epinephrine > 0.05 μg/kg/min
- Vasopressin > 0.03 units/min

Vasopressin (any dose) in combination with other vasopressors listed above

- Intravenous fluid therapy of at least 30 mL/kg was administered within 24 hours of inclusion.
- The patient's condition allowed for the use of an Efferon LPS column for at least 4 h.

Non-inclusion criteria:

- Failure to obtain informed consent from patients, family members, or legal representatives.
- Active local surgical infection
- Use of other blood purification methods for extracorporeal elimination of LPS and inflammatory mediators in the treatment of septic shock
- Failure to achieve or maintain a minimum mean arterial pressure (MAP) ≥65 mmHg despite vasopressor and fluid therapy for 24 h.
- End-stage renal disease
- Acute pulmonary embolism.
- Transfusion reaction
- Severe congestive heart failure (New NYHA class IV, LV ejection fraction <35%)
- History of acute myocardial infarction within the past 4 weeks.
- Uncontrolled bleeding (acute blood loss within the past 24 h)
- Severe granulocytopenia (white blood cell count < 0.5×10^9/L) or severe thrombocytopenia (<30×10^9/L)
- HIV infection
- Allergy to heparin or history of heparin-associated thrombocytopenia.
- Any other condition that, in the opinion of the investigator, would prevent the patient from being a suitable candidate for inclusion in the study (e.g., terminal chronic disease).
- Lack of adequate antimicrobial therapy.

Appendix 2.

Determination of bacterial endotoxin concentration

LPS concentration was measured using the kinetic LAL test [doi:10.1128/jcm.27.5.947-951.1989] with materials, reagents, and standards from Associates of Cape Cod, Inc. (USA).

Blood samples were collected in 9 ml vacuum tubes and preserved with lithium heparin. Plasma was isolated by centrifugation at 1000 × g for 10 min and quickly frozen at -18°C.

Plasma samples were thawed immediately before analysis, centrifuged (2000 g for 2 min), and inactivated. Inactivation was performed according to standard procedure [doi:10.1038/s41598-021-83487-4] by adding 50 µL of plasma to 450 µL of apyrogenic water (LAL Reagent Water, cat# WP1001), followed by incubation in a thermostat at 70°C for 15 min. Samples of inactivated plasma, aqueous LPS solutions for calibration (0.005 UE/mL, 0.05 UE/mL, 0.5 UE/mL) prepared from the LPS control standard (CSE E. Coli O113:H10, cat# E0005-1), and apyrogenic water as a negative control (all 40 µL each) were then placed in a 96-well flat-bottomed plate (Pyroplate, cat# CA961-10). Forty microliters of freshly prepared LAL reagent (PYROCHROME, cat# C1500-5) were added to each sample well. The plate was placed in a microplate spectrophotometer (SPECTROstar Nano, BMG LABTECH, Germany) preheated to 37°C. Serial stirring and recording of the optical densities at 390 and 450 nm were performed. The concentration of LPS in blood plasma was determined using a preset calibration line (Figure 1Sa).

The rapid degradation of LPS in blood plasma is well known [doi:10.1007/BF01658154]; therefore, we recalculated the measured values of LPS concentration considering the time between the sampling and freezing of the sample using preset degradation curves for different concentrations of LPS (ranging from 0.05 to 5 EU/mL) in the plasma of healthy donors (n=16) (Figure 1Sb).

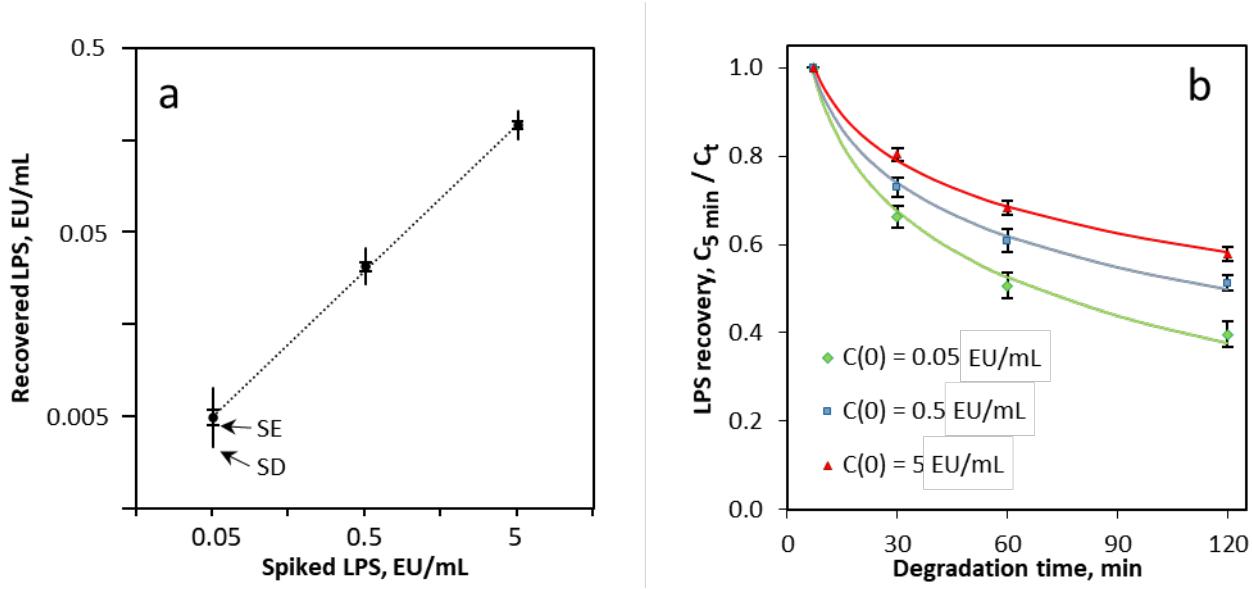

Figure 1S. a. The spike - recovery calibration curve (10x dilution), data given as mean ± SE and SD. b. The LPS degradation curves at 25°C, data given as mean ± SE.

Appendix 3.

Table 1S. Isolated microorganisms and their sensitivity to antibiotics at the beginning of the therapy

	Efferon LPS, n=38 (%)	**Control, n=20 (%)**	**P-value**
Gram-negative	**25 (66)**	**12 (60)**	**0.776**
Escherichia coli	11 (29)	4 (20)	0.542
Carbapenem resistant	0	1	0.345
Klebsiella spp.	15 (39)	9 (45)	0.782
Carbapenem resistant	9	7	0.657
DTR**	6	6	0.400
Other Gram-negative bacteria	10 (26)	4 (20)	0.751
Carbapenem resistant	6	2	1
DTR	6	2	1
Gram-positive	**10 (26)**	**9 (45)**	**0.239**
Enterococcus spp.	5 (13)	5 (25)	0.290
Vancomycin resistant	2	1	1
Other Gram-positive bacteria	5 (13)	4 (20)	0.704
Proportion of patients (positive/total), in which bacteria resistant to the initial antibiotic therapy were found prior to initiation of antibacterial therapy*	**15/37 (41%)**	**7/19 (38%)**	**1**

* At least one of the microorganisms isolated from patients from the beginning of therapy was resistant or moderately resistant to all empirically prescribed antibiotics.

**: DTR - Difficult to treat resistance. DTR status requires confirmed antibiotic resistance to ≥ 1 carbapenem, ≥ 1 extended-spectrum cephalosporin, ≥ 1 fluoroquinolone. Candida of unknown species have been reported only in two cases.

Table 2S. Bacteria species isolated from patients during hospitalization

	Efferon LPS, n=38 (%)	**Control, n=20 (%)**	**P-value**
Gram-negative	**35 (92)**	**19 (95)**	**1**
Escherichia coli	28 (74)	12 (60)	0.241
Klebsiella spp.	10 (26)	7 (35)	0.557
K. pneumoniae	4 (11)	5 (25)	0.253
Enterobacter spp.	9 (82)	3 (15)	0.510
Acinetobacter spp.	5 (13)	7 (35)	0.088
A. baumannii	3 (8)	6 (30)	0.052
Pseudomonas aeruginosa	5 (13)	2 (10)	1
Proteus spp.	4 (11)	1 (5)	0.647
Stenotrophomonas maltophilia	1 (3)	0 (0)	1
Citrobacter freundii	0 (0)	1 (5)	0.351
Moraxella spp.	1 (3)	1 (5)	1
Gram-positive	**22 (58)**	**19 (95)**	**1**
Enterococcus spp.	15 (39)	7 (35)	0.780
E. fecalis	14 (37)	7 (35)	1
Staphylococcus spp.	5 (13)	3 (15)	1
S. aureus	2 (5)	1 (5)	1
Streptococcus spp.	2 (5)	2 (10)	1
Pantoea agglomerans	0 (5)	1 (5)	0.351

Appendix 4.

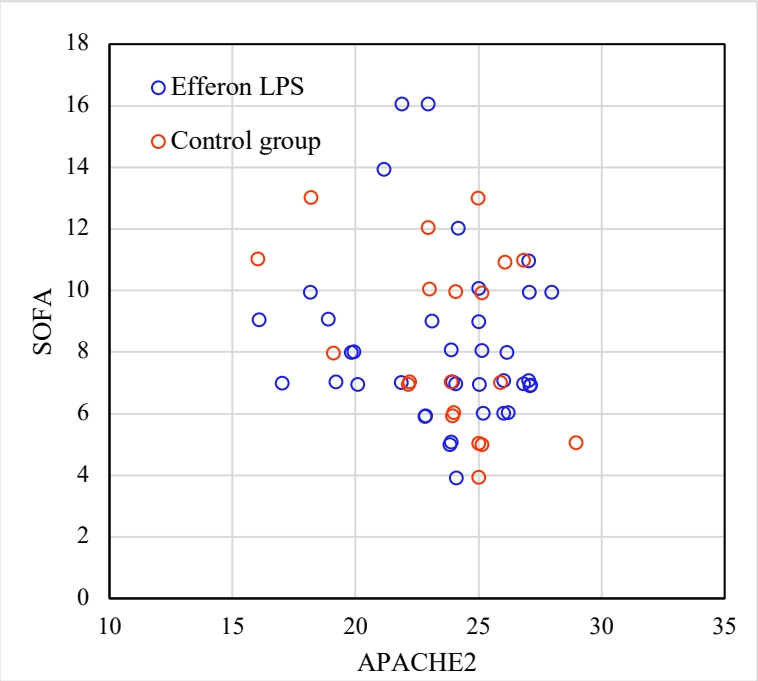

Fig 3S. Scatter plot of SOFA vs APACHE II score.